

Claims

1. Arrangement for closing roll nips (N) in the multi-nip calender (1), in which the calender consists of one or several sets of rolls (2) attached to one or several frames (7) so that each set of rolls has at least three rolls, and at least the first roll (3; 31) and the last roll (3; 32) in each set of rolls is provided with equipment, with which their casing can be moved to the direction of the intermediate rolls (4) in the said set of rolls, **characterised** in that
- the first roll (3; 31) and the last roll (3; 32) in each set of rolls are polymer-coated rolls, which are fixedly attached to the calender frame (7) and are provided with internal loading devices (31a, 32a),
 - every other roll in a set of rolls (2) is a polymer coated roll while every other roll in said set of rolls (2) is a metal roll,
 - one intermediate roll (4) in each set of rolls is fixedly attached to the calender frame, and in case more than one intermediate rolls (4) are present, the other intermediate rolls (4) are provided with lightening elements for lightening the auxiliary means related to the intermediate rolls in which case
 - the roll nips (N) in the set of rolls (2) is closed so that
 - the roll nips between the first roll (3; 31) and the fixedly attached intermediate roll (4) in the set of rolls (2) are closed by moving the casing (31b) of the first roll by means of an internal loading device (31a), in the direction parallel to the plane of the set of rolls towards the intermediate roll/rolls (4) and
 - the roll nip/nips between the last roll (3; 32) and the fixedly attached intermediate roll (4) are closed by moving the casing (32b) of the last roll by means of an internal loading device (32a) in the direction parallel to the plane of the set of rolls towards the intermediate roll/rolls (4).
2. Arrangement according to claim 1, **characterised** in that the first roll (3; 31) and/or the last roll (3; 32) are shoe rolls, in which one or several shoe elements (31a, 32a) are located under the casing of the roll, at the place of the roll nip (N; Na1, Na2), which can be loaded with liquid so that the casing (31b; 32b) of the said shoe roll moves in relation to the intermediate rolls in the set of rolls.
3. Arrangement according to one of the preceding claims, **characterised** in that the first roll (3; 31) and/or the last roll (3; 32) are shoe rolls, in which one or sev-

eral shoe elements (31a, 32a) are located under the casing of the roll, at the place of the roll nip (N; Na1, Na2), which can be loaded with liquid so that the casing (31b; 32b) of the said shoe roll moves in relation to the intermediate rolls in the set of rolls.

- 5 4. Arrangement according to any one of the previous claims, in which further the linear load distribution of the roll nips (N) in the set of rolls is controlled by an additional load brought to the first and/or last roll (3; 31, 32) in the set of rolls, **characterised** in that
- 10 - the additional load of the first roll (3; 31) in the set of rolls (2) is used for influencing the linear loads of the roll nips of the intermediate rolls between the attached intermediate roll and the last roll to a substantially lesser extent than the linear loads of the roll nips between the attached intermediate roll and the first roll, and
- 15 - the additional load of the last roll (3; 32) in the set of rolls (2) is used for influencing the linear loads of the roll nips of the intermediate rolls between the attached intermediate roll and the first roll to a substantially lesser extent than the linear loads of the roll nips between the attached intermediate roll and the last roll.
5. Arrangement according to claim 4, **characterised** in that the additional load is brought to the first and/or last roll (3; 31, 32) in the set of rolls using the internal loading elements of the said roll.
- 20 6. Arrangement according to claim 5, **characterised** in that the additional load is brought to the first and/or last roll (3; 31, 32) in the set of rolls (2) using a loading element outside the said roll, such as a roll outside the set of rolls.
- 25 7. Arrangement according to any of the preceding claims, **characterized** in that, the calender consists of two sets of rolls (2) attached to two different frames.